

## **REMARKS/ARGUMENTS**

### **Information Disclosure Statement**

The Examiner has noted that a copy of Document D19, Lin et al. 1998, Extended life-span and stress resistance in the *Drosophila* mutant Methuselah. Science, 282:1837-1840 was not provided in Applicant's information disclosure statement.

Applicant provides herewith a copy of the cited document and requests consideration of Applicant's complete information disclosure statement.

### **Response to Provisional Double Patenting Rejection**

The Examiner has provisionally rejected Claims 1-10, 12-22 and 24 under 35 U.S.C. §101 as claiming the same invention as that of claims 1, 3-5, 8-19, 21-24 and 31 of copending Application No. 10/077,670, published as 2002/0161302, October 31, 2002 ("the '670 Application").

Claims 1-10 and 12-16 of the present application do not claim the same invention as the '670 Application. Claims 2-10 and 12-16 are dependent of claim 1. Claim 1 of the present application includes a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the steps of *exposing an adult Drosophila to conditions able to induce cardiac hypoxia or anoxia*, imaging the heart of the *Drosophila*, measuring the movements of the heart in the image, analyzing the measurements of the movements, and identifying a gene affecting the cardiac function of the *Drosophila* (emphasis added). The claims of the '670 Application do not include a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the step of exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia.

Claims 17-22 and 24 of the present application do not claim the same invention as the '670 Application. Claims 18-22 and 24 depend from claim 17. Claim 17 of the present invention includes a method of screening for agents affecting cardiac function after or during hypoxia or anoxia, including the steps of: *exposing an adult Drosophila to conditions able to induce cardiac hypoxia or anoxia*, exposing the Drosophila to an agent, imaging the heart of the Drosophila; measuring the movements of the heart in the image; analyzing the measurements of the movements; and identifying an effect of the agent on the cardiac function of the Drosophila by comparing the analysis to a control (emphasis added). The claims of the '670 Application do not include a method of screening for agents affecting cardiac function after or during hypoxia or anoxia, including the step of exposing an adult Drosophila to conditions able to induce cardiac hypoxia or anoxia.

For the foregoing reasons, Applicant submits that the present application does not claim the same invention as the '670 Application. The '670 Application does not teach each and every element of the claimed invention. Accordingly, Applicant respectfully requests the Examiner withdraw the provisional double patenting rejection.

**Claims 17-24 Are Not Anticipated by Paternostro et al Under 35 U.S.C. §102(b)**

The Examiner has rejected claims 17-24 under 35 U.S.C. §102(b) as allegedly being anticipated by 2001, Circ. Res. 88:1053-1058 (Paternostro et al.). The Examiner alleges Paternostro et al teaches a method wherein *Drosophila melanogaster* were used to determine the effects of certain agents on cardiac function after or during hypoxia or anoxia.

Paternostro et al. does not teach a method of screening for agents affecting cardiac function after or during hypoxia or anoxia, including the steps of: exposing an adult Drosophila to conditions able to induce cardiac hypoxia or anoxia, exposing the Drosophila to an agent, imaging the heart of the Drosophila, measuring the movements of the heart in the image, analyzing the measurements of the movements, and identifying an effect of the agent on the

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cardiac function of the *Drosophila* by comparing the analysis to a control.

Paternostro et al. demonstrates methods of testing the ability of a *Drosophila* heart to sustain an elevated heart rate. These methods include raising the ambient temperature and external electrical pacing using electrodes.

First, Patenostro et al. does not teach exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia. While the Paternostro et al does expose *Drosophila* to an elevated ambient temperature or external electrical pacing, the disclosed conditions would not induce cardiac hypoxia or anoxia because the *Drosophila* are exposed to normal oxygen levels in the ambient air.

Second, Paternostro et al. does not teach exposing a *Drosophila* to an agent and exposing the *Drosophila* to conditions that are able to induce cardiac hypoxia or anoxia. In other words, Patenostro et al did not test the effect of an agent on an induced hypoxic or anoxic condition and did not test the effect of an agent while inducing hypoxia or anoxia.

Third, Paternostro et al does not teach identifying an effect of an agent on an induced hypoxic condition by comparing the analysis to a control. As previously discussed, agents were not provided to the *Drosophila* in combination with exposing the *Drosophila* to conditions able to induce cardiac hypoxia or anoxia in Paternostro et al. Thus, an effect of an agent on an induced hypoxic condition was not identified nor compared to a control.

For the foregoing reasons, Paternostro et al. does not teach each and every element of the claimed invention. Therefore, Application respectfully requests this rejection be withdrawn.

**Claims 1-16 Are Not Obvious over Paternostro et al or the '670 Application in view  
of St Johnston under 35 U.S.C. §103**

The Examiner has rejected claims 1-16 under 35 U.S.C. 103(a) as being unpatentable over Paternostro et al. (2001, Circ. Res. 88:1053-1058) or Paternostro US 10/077,670 (the '670 Application) in view of St Johnston (2002, Nat. Rev. Genet., 3:176-88).

The cited references fail to render the claimed invention obvious. Claims 2-16 are dependent of claim 1. Claim 1 of the present application includes a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia and includes the step of exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia. Neither Paternostro et al., the '670 Application or St Johnston report a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the step of exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia.

As previously discussed above, Paternostro et al. discloses methods of testing the ability of a *Drosophila* heart to sustain an elevated heart rate. These methods include raising the ambient temperature and external electrical pacing using electrodes. Paternostro et al does not provide a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the step of exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia.

The '670 application discloses a method of screening for a gene affecting cardiac function including providing an adult *Drosophila*, imaging the heart of the *Drosophila*, measuring the movements of the heart, and analyzing the measurements. The '670 Application does not provide a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the step of exposing an adult *Drosophila* to conditions able to induce cardiac hypoxia or anoxia.

The St Johnston discloses methods of causing mutations in Drosophila. St Johnston does not disclose a method of screening for a gene affecting cardiac function after or during hypoxia or anoxia including the steps of exposing an adult Drosophila to conditions able to induce cardiac hypoxia or anoxia, imaging the heart of the Drosophila, measuring the movements of the heart in the image, analyzing the measurements of the movements, and identifying a gene affecting the cardiac function of the Drosophila.

The cited references, Paternostro et al, the '670 Application and St Johnston, either alone or in combination fail to suggest or teach or provide motivation for the methods of the present application. Thus, the cited references, either alone or in combination, do not teach each and every element of the claims as filed.

For the foregoing reasons, Applicant submits that the claims can not be obvious over Paternostro et al, the '670 Application and St Johnston under 35 U.S.C. 103(a). Accordingly, Applicant respectfully requests that these rejections be withdrawn.

Applicant respectfully submits that the claims are ready for examination and in condition for allowance.

Please apply any charges not covered, or any credits, to **Deposit Account Number 501321** in the name of David R. Preston & Associates, having **Customer Number 24232**.

Respectfully submitted,



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